

Two Sheets
Sheet 1.

Pehr Johan Carlsson's

PATENTED JAN 17 1871

110956

Imp^d File-Cutting Machine

Fig. 1.

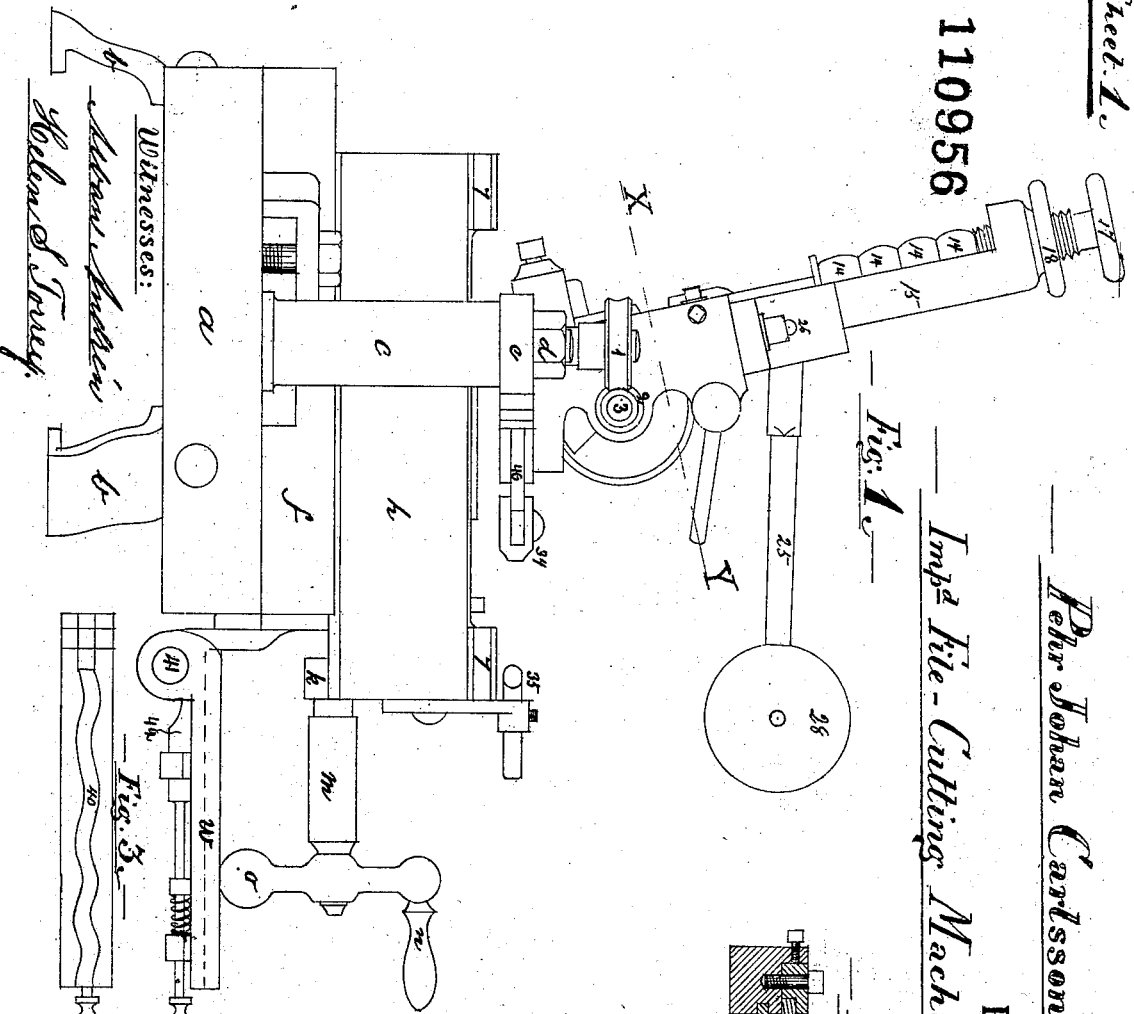


Fig. 4.

Fig. 2.

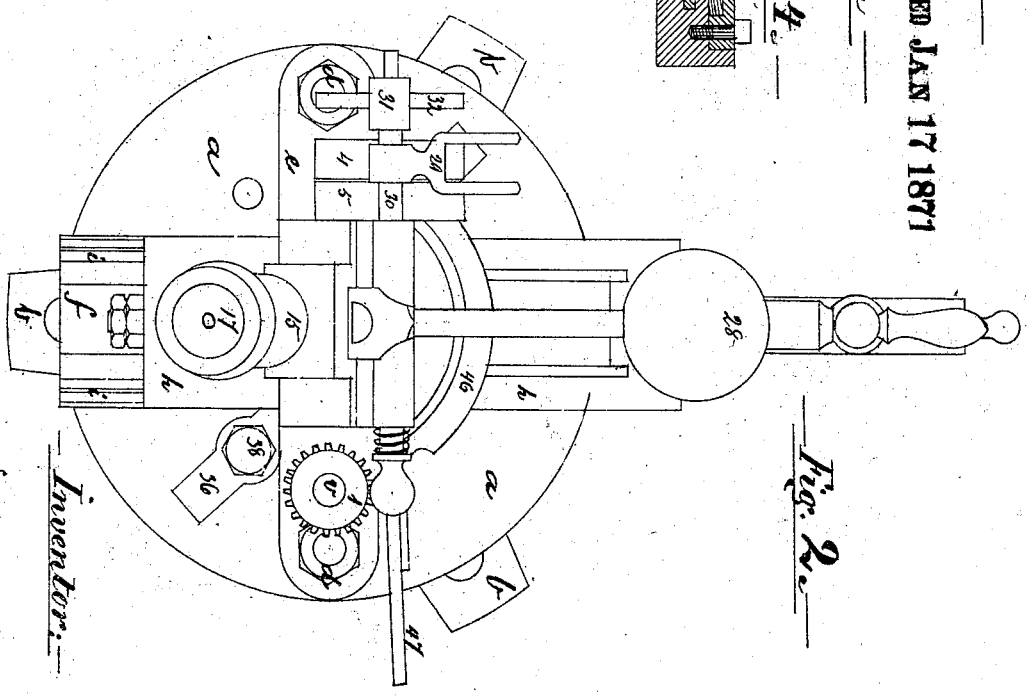


Fig. 3.

Witnesses:
Attest: *Wm. J. Toney*

Inventor:
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Peter Johan Carlsson's

Imp^d Tile-Cutting Machine

Fig. 5.

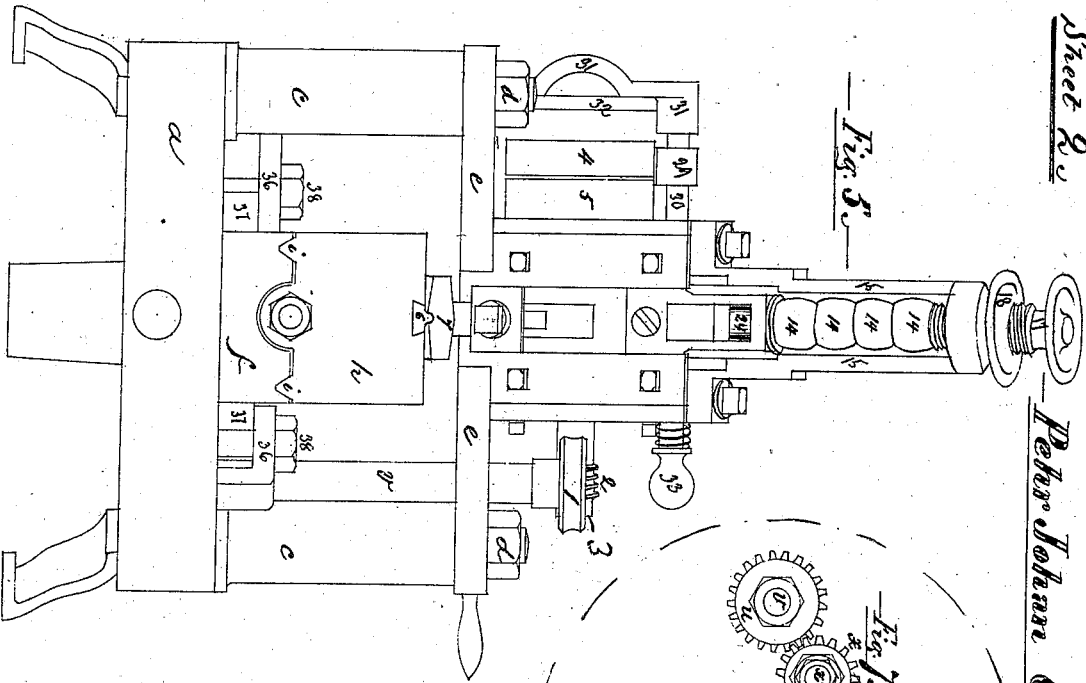


Fig. 7.

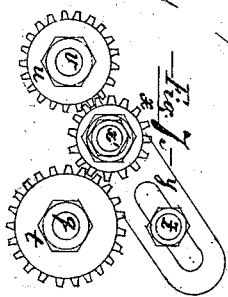
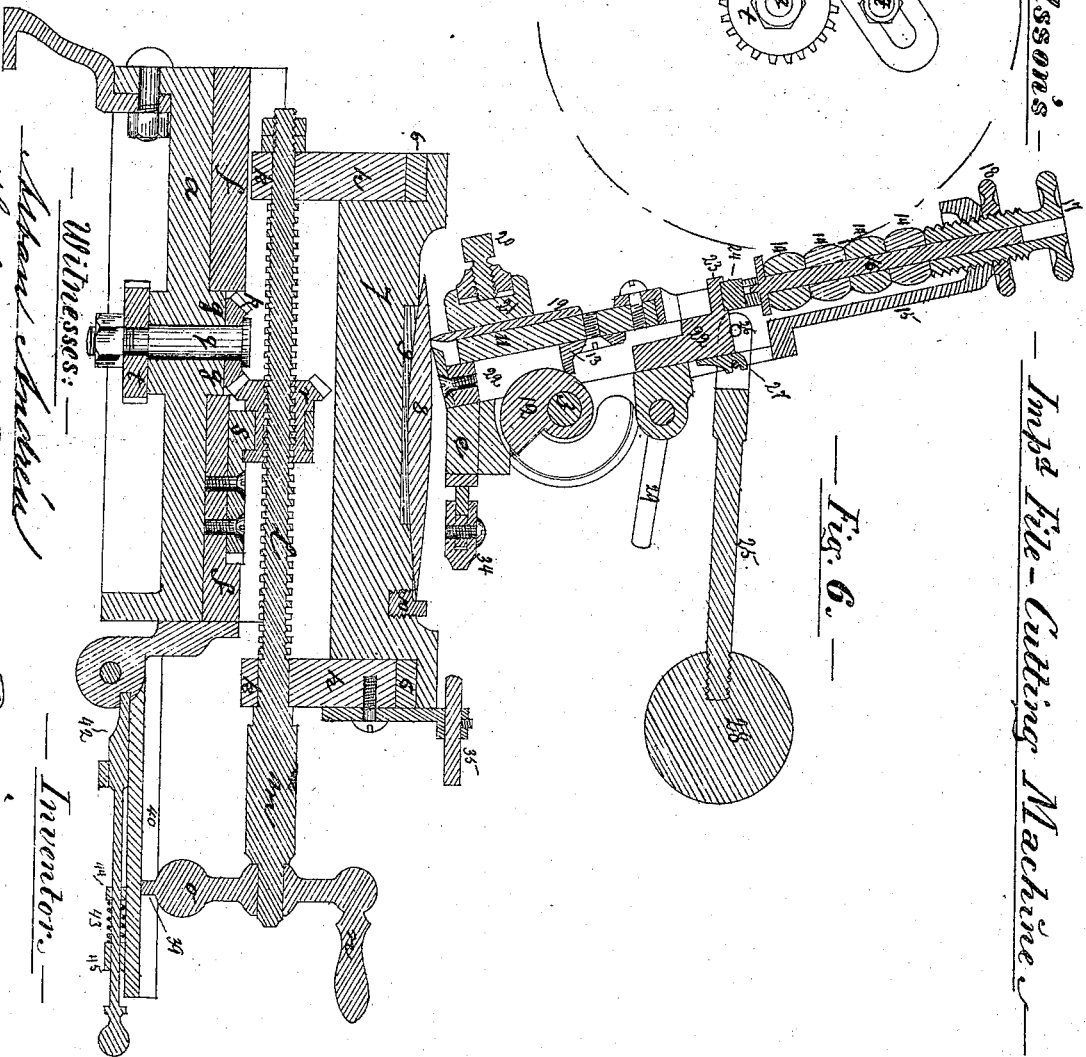


Fig. 6.



Witnesses:

Adam Anderson

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PEHR JOHAN CARLSSON, OF ANDOVER, MASSACHUSETTS.

Letters Patent No. 110,956, dated January 17, 1871.

IMPROVEMENT IN FILE-CUTTING MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

I, PEHR JOHAN CARLSSON, of Andover, in the county of Essex and State of Massachusetts, have invented certain Improvements in File-Cutting Machines, of which the following is a specification.

Nature and Objects of the Invention.

The nature of my invention relates to a revolving carriage that is movable around a center below the chisel or hammer, whereby I am enabled to cut the files at any desirable inclination to the central line or axis of said files; also, to an automatic feeding arrangement in combination with a feeding device for imitating hand-cut files; also, to improvements on the face-plate bar or follower, and the mode of pressing the same evenly onto the file that is to be cut; also, to an automatic belt-shipper, whereby the machine will stop at any desirable place when the file is cut; also, to improved springs for the hammer that holds the chisel; and also, to the arrangement of the file-bed support and to the mode of hanging the same on the sliding carriage; and, lastly, to the improved feeding-gear arrangement in the hollow sliding carriage, whereby the carriage may be turned in a horizontal plane in any desired position without disturbing the action of the feeding-gears.

Description of the Drawing.

The drawing consists of two sheets. On sheet 1—
Figure 1 is a side elevation;
Figure 2 is a ground plan;
Figure 3 is a plan of the piece *w* on fig. 1; and
Figure 4 is a transverse section over the line X Y, taken on fig. 1.

On sheet 2—

Figure 5 is an end view, seen from X, fig. 1;
Figure 6 is a central longitudinal section; and
Figure 7 is a plan of the feeding arrangement under the table of the machine.

Similar letters refer to similar parts on the drawing. *a* is a circular table resting on a number of feet, *b b*, or similar arrangement.

On the table stands two hollow pillars *c c*, through which perpendicular bolts are securely screwed into the table.

The cross-bar *e* rests upon the above-named pillars *c c*, and the whole is secured firmly to the circular table *a* by means of the nuts *d d*.

On the top of the table is a revolving carriage, *f*, revolving around the center of the table *a*, and held in place by means of a circular projection, *g*, in the center of the table. This central projection *g* fits into a corresponding circular recess in the revolving carriage *f*.

The sliding carriage *h* is made to slide forward and

backward on the carriage *f*, for which purpose I make V-shaped guides *i i* on the under side of the sliding carriage *h*, moving in corresponding V-shaped grooves on the top of the carriage *f*.

In each end of the sliding carriage *h* is an ear, *k k*, whereinto the ends of the screw *l* are resting.

Said screw *l* has at one end a prolongation, *m*, to which is attached a handle, *o*, and a crank, *n*.

On the top of the circular projection *g* of the table *a* is a bevel-gear, *p*, keyed onto a bolt, *q*.

Said bevel-gear *p* engages into another bevel-gear, *r*, that is bored out and tapped so as to screw over the screw *l*.

A bearing, *s*, is made to encompass the hub of the bevel-gear *r*, whereby the gear *r* is prevented from any lateral motion.

The bearing *s* is secured to the revolving carriage *f* by means of screws, as shown in section on fig. 6.

By means of this arrangement it will be seen that the motion of the revolving carriage *f* around the center *g* will not prevent the engagement of the bevel-gears *p* and *r*, no matter how much the carriage *f* is moved from the central position, as shown on fig. 2.

On the lower end of the bolt *q* is keyed a small spur-gear, *t*, fig. 7. The gear *t* engages with the intermediates *x*, that also engage with the spur-gear *u* on the spindle *v*.

The intermediates *x* are movable around the spindle *v*. This spindle is attached to a frame, *y*, having a slot-hole through which the screw *z* is screwed into the bottom of the table *a*.

The spindle *v* projects upward through the table *a*, and furthermore through the cross-bar *e*, and has on its upper end a worm-wheel, *1*, that engages with the worm *2* secured to the shaft *3*.

The shaft *3* rests in two bearings, and has on its opposite end one fast and one loose pulley, *4* and *5*, onto which the belt is leading from the power or motor that is used for driving the machine.

The feed of the machine can be altered easily by substituting a larger or smaller spur-gear for the intermediate *x*, which is done simply by loosening the screw *z* and moving the frame *y* to its corresponding position, (refer to fig. 7.)

In the upper ends of the sliding carriage *h* are steel bars or pivots *6 6*, dovetailed into the carriage *h* firmly.

On these pivots *6 6* hangs the file-support *7*, in such a manner as to adjust itself easily to the unevenness of the file that is to be cut.

The file is shown in section at *8*, fig. 6, resting onto a cushion of metal, *9*, and kept from sliding backward by means of the support *10*, as shown.

The hammer *11* is moved up and down in the following manner: On the shaft *3* is keyed the lifting-cam

12, which revolves with the shaft 3, and in so doing pushes the knee 13 upward. This knee 13 is made firm to the hammer 11 by means of a screw, as shown on fig. 6, and the hammer will consequently be thrown upward for each revolution of the cam-shaft 3. The hammer is quickly thrown downward by the compressive and elastic action of the egg-shaped rubber springs 14 14 14 14.

The rubber-springs 14 14 14 14 are partially inclosed in a semicircular frame, 15, that is firmly attached to the cross-bar *c*.

A rod, 16, projects through the rubber springs, and is held in place by the hollow screw 17, and by a bearing in the upper end of the hammer 11.

By means of the hollow screw 17 can be obtained any desirable pressure of the rubber springs onto the hammer.

18 is a check-nut for the purpose of holding the screw 17 from unscrewing when the machine is in motion.

The chisel 19 is held firmly to the hammer by means of the screw 20 and the wedge 21, in a similar way to common tool-posts on lathe or planing-machines.

22 is the face-plate bar, movable in bearings, as shown in fig. 4. The object of this face-plate bar is to hold the file firmly when the blow from the hammer is given, and to accomplish this I make a forked lever, 25, hung on a fulcrum, 26, and pressing down the face-plate bar by means of the hook and pin, as shown at 27 on fig. 6.

A suitable weight, 28, is attached to the lever 25, of suitable size to press the face-plate bar down firmly onto the file.

29 is a shipper for the purpose of leading the belt from the fast to the loose pulley, or *vice versa*, and is attached to the rod 30.

This rod has on its extreme end a frame, 31, to which is secured a friction-pulley that will stop the fixed pulley 4 as soon as the belt is shipped.

33 is a knob on the end of the rod 30, between which and the frame is a coiled spring for the purpose of holding the shipper in its proper position.

The shipper is also made to act automatically by means of the action of the pointer 34, fig. 6, onto the adjustable finger 35, secured to the sliding carriage *h*.

A bar, 46, made partly as a segment to encompass the front side of the cross-bar *c*, and having its extreme ends carried out straight, one end to serve as a handle, and the other end serves as a "catch" for holding the lower end of the shipper, that extends below the drums, firmly during the operation of the machine, is made to move over the circular part of the cross-bar *c*, and held onto the same bar *c* by means of screws going through slot-holes in the circular bar 46, and screwed into the cross-bar *c*.

When the bar 46 is moved so as to withdraw the "catch" from the lower part of the shipper, then acts the coiled spring on the rod 30, whereby the shipper is automatically moved over to the loose pulley.

Fig. 4 shows the section of the hammer and face-plate bar and their respective guides.

On that figure, 11 is the hammer, having step-guides on each side. These guides are adjustable so as to allow for the wearing out of the hammer and guides.

22 is the section of the face-plate bar, having projections on two opposite sides, moving in corresponding grooves in the upright frame.

23, on fig. 6, is a projecting bracket on the face-plate bar, and is made to support a rubber spring, 24, onto which the upper end of the hammer will strike in its downward movement, and thus prevent the making of a second cut in one revolution.

The revolving carriage *f* can be held firmly to the circular table *a* by means of "dogs" 36 36 pressing onto ears 37 37, (in one piece with the carriage *f*).

The dogs are pressed down by means of screws 38 38 going through the dogs and screwed into the table *a*.

Much objection has been made to machine-cut files on account of their perfectness and evenness, and, to avoid this objection, I have made an attachment for imitating hand-cut files, which is fully shown in figs. 1, 3, and 6.

A pointer or finger, 39, is attached to the handle *o*, fig. 6, and is made to move in an irregular groove, 40, fig. 3.

By this arrangement is the screw *l* made to turn slightly backward and forward during the process of the file-cutting, whereby I obtain a more uneven feed of the sliding carriage, and consequently a more uneven-cut file.

The arm *w* is made to turn around the fulcrum 41, and is held in the position shown on figs. 1 and 6 by means of the locking arrangement shown in fig. 6.

This arrangement consists of a rod, 42, projecting into the hub 41, and held there by means of the coiled spring 43, fig. 6, pressing against the collar 44 on the locking apparatus, and against the bearing 45.

When the rod 42 is withdrawn from the hub 41 the whole can be turned down so as to allow the handle *o* to be turned without interference.

On fig. 2 is shown a circular bar, 46, concentric with the circular table *a*.

To this circular bar is secured the automatic shipper arrangement 34, as before named.

This circular arm connects with the handle 47, whereby the shipper can be operated independent of the automatical feed.

The object of having the shipper-bar circular, concentric to the circular table, is so as to insure the exact working of the feed in all positions of the revolving carriage *f* and the sliding carriage *h*.

It is needed on my machine that the chisel that cuts the file, and the face-plate lower edge, must be right over the very center of the revolving carriage, whereby any angle may be cut on the file simply by turning the revolving carriage such an angle without disturbing the position of the chisel and face-plate bar.

The center of the pillars *c c* and the chisel-edge are held in one central line for the purpose of swinging the revolving carriage the greatest angle possible.

Having thus fully described the construction and operation of this my invention,

I wish to secure by Letters Patent, and claim—

1. In combination with the sliding carriage *h* the screw *l*, bevel-gears *p* and *r*, the latter bored out and screw-threaded so as to encompass and constitute the nut for the screw-shaft *l*, and the bearing *s* on the carriage *f*, as fully set forth.

2. The combination, of the weight 28, forked rod 25, fulcrums 26 and 27, with the face-plate bar, for the purpose of holding the face-plate bar onto the file in a manner set forth.

3. The combination, of the pointer 39, (attached to the screw *l*), arm *w* provided with an irregular groove, with carriage *f*, to which it is hinged, and the locking apparatus consisting of the devices 42 43, 44, and 45, substantially as and for the purpose set forth.

4. In combination with the frame *a*, hollow pillars *c c*, and cross-bar *c*, the feeding mechanism, as made, with the shaft 3, worm 2, worm-wheel 1, shaft *v*, gears *t*, *u*, and *x*, and adjustable frame *y*.

5. The automatical shipper arrangement, consisting of the circular bar 46, index 36, and adjustable finger 35, in combination with the fork 29, frame 31, and friction-pulley 32, as fully set forth.

6. The projecting bracket 23 with its spring, attached to the face-plate bar, movable in the perforated hammer, in a manner and for the purpose set forth.

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Witnesses:

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